UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/712,654	11/14/2000	Ramesh Gupta	ECB-0010	4644

27810 7590 02/17/2004

EXXONMOBIL RESEARCH AND ENGINEERING COMPANY
P.O. BOX 900
1545 ROUTE 22 EAST
ANNANDALE, NJ 08801-0900

EXAMINER	
RIDLEY, BASIA ANNA	

ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 02/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/712,654	Applicant(s) GUPTA ET AL.
	Examiner Basia Ridley	Art Unit 1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-12 and 14-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-12 and 14-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. Acknowledgment is made of applicant's claim for domestic priority under 35 U.S.C. 120. The specification should be amended to include current status of all referenced nonprovisional parent applications.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claim(s) 9-12 and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beal et al. (USP 3,607,000) in view of Gupta (USP 4,313,908).

Regarding claim(s) 9, 12 and 16, Beal et al. disclose(s) a similar method for extending operating life of a fixed bed reactor comprising:

- (a) placing a bypass apparatus (Fig. 7) within a fixed catalyst bed in substantial alignment with flow of feedstock;
- said bypass apparatus comprising a cage member (84) embedded in the catalyst bed comprising a first elongated hollow member having a top wall, side walls and a bottom wall, said cage member (84) having openings therein; and
- a second hollow elongated member (72) for bypassing an increasing amount of said feedstock through said second hollow elongated member (72) into said cage member (84) as top layer of said fixed bed fouls to create a bypass flow, said second hollow elongated member (72) being disposed within said cage member (84) and protruding through said top wall of said cage member (84) and wherein said second hollow elongated member (72) extends above said catalyst

bed through said cage member (84), said second hollow elongated member (72) being sized to regulate said bypass flow, said cage member (84) having a substantially larger cross-section than said second hollow elongated member (72) so that said bypass flow exits said cage member (84) into said bottom layer of said at least one fixed catalyst bed at an effectively reduced velocity;

- (b) introducing said feedstock into said fixed bed of catalytic material, wherein a majority of said feedstock will flow through said top layer of said fixed bed of catalytic material (C13/L31-C16/L13); and

- (c) as said top layer of said fixed bed of catalytic material fouls, bypassing said increasing amount of said feedstock to said bottom layer of said fixed bed of catalytic material (C13/L31-C16/L13).

Beal et al. does not explicitly disclose the method wherein said second hollow elongated member is continuously opened to said bypass flow, nor does he disclose specific pressure drop for said member.

Gupta teaches a reactor comprising bypass apparatus, wherein said bypass apparatus comprises second hollow elongated member, and wherein:

- said second hollow elongated member, wherein said second hollow elongated member is continuously opened to said bypass flow and has a pressure drop of about 5 to about 50 times greater than that of said top layer of said catalyst bed when said catalyst bed is a fresh catalyst bed (C3/L47-C4/L13).

Said reactor is an improvement of a reactor comprising bypass apparatus, wherein said bypass apparatus comprises a rupture disk. It allows for a low pressure drop bypass and several fold increase in on-time of the reactor, and at the same time increases system reliability over

bypass systems comprising a rupture disk (C1/L45-59).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to replace second hollow elongated member comprising a rupture disk in reactor of Beal et al., with a second hollow elongated member having a pressure drop of about 5 to about 50 times greater than that of top layer of said catalyst bed when said catalyst bed is a fresh catalyst bed as taught by Gupta, for the purpose of providing a low pressure drop bypass and several fold increase in on-time of the reactor, and increasing system reliability.

Regarding claim(s) 10-11 and 17-20, Beal et al. in view of Gupta disclose(s) all of the claim limitations as set forth above, additionally Beal et al. discloses the method for operating a fixed bed reactor, wherein:

- said feedstock is selected from the group consisting of liquid feed, vapor feed and mixtures thereof (C1/L2-6);
- said feedstock is selected form the group consisting of hydrocarbon feedstocks, chemical feedstocks, and mixtures thereof (C1/L2-6);
- the bypass apparatus (Fig. 7) further comprises a separation device (76) disposed above said second hollow elongated member (72);
- the bypass apparatus (Fig. 7) further comprises a separation device (76) selected from the group consisting of caps, centrifugal separators and cyclones (Fig. 7);
- said fixed catalyst bed contains packing material for distributing particulates passing through said bypass apparatus (Fig. 7); and
- said packing material is selected from the group consisting of catalyst particles, alumina balls, inert particles, inert packing and mixtures thereof (Fig. 7).

Regarding claim(s) 14-15, Beal et al. in view of Gupta disclose(s) all of the claim limitations as set forth above, but does not recited explicitly the specific diameters of the first and second members.

The specific diameters of the first and second members are not considered to confer patentability to the claims. As rate with which the feedstock is bypassing the catalyst layer and the pressure drop are variables that can be modified, among others, by adjusting said member diameters, the precise diameters of the members would have been considered a result effective variable by one of ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed diameters of the members cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have routinely optimized the diameters of the members in the apparatus of Beal et al. to obtain desired rate of bypassing of the top layer of the fixed catalyst bed (*In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Response to Arguments

5. Applicant's arguments filed on 19 November 2003 have been fully considered but they are not persuasive.

6. In response to applicant's statement, that examiner's position regarding Gupta '303 was first set out in Paper 20, the examiner would like to point out that all arguments presented in Paper 20 were made in response to applicant's arguments presented in After Final Response filed on 3 July 2003 as Paper 19.

7. The applicant argues that Gupta does not show a catalyst bed but rather separate beds divided from one another by distributor trays and possibly other equipment. This is not found persuasive. The examiner notes that recitation "catalyst bed" in the instant invention was given its broadest reasonable meaning consistent with the specification, and as such system of Gupta disclosing a catalyst bed comprising multiple layers (e.g. 22a, 22b, and 21) reads on recited "catalyst bed". Further the examiner would like to point out that the rejected claim(s) do not exclude system where catalyst bed comprises other equipment separating its layers, as the claimed transitional term "comprising" permits the inclusion of other steps, elements, or materials, including both, those disclosed but not claimed by applicant and those neither disclosed nor contemplated by applicant. See *In re Baxter*, 656 F.2d 679, 686, 210 USPQ 795, 802 (CCPA 1981).

8. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (e.g., specific reactor height, lack of distributor trays, or tubes of varying lengths) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the

specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

9. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In the instant case, Gupta clearly teaches that bypass apparatus without "moving or destructible component" (e.g. rupture disc) is an improvement over an apparatus which contains said moving or destructible component (C1/L45-60). The disclosure of Gupta, while disclosing said bypass apparatus as being used in few exemplary embodiments of catalytic reactors, does not exclude its use in other reactors. In fact, Gupta in Fig. 1 and 1a shows applicable prior art which comprises a fixed bed reactor wherein the layers of the catalyst bed are not separated by any other equipment.

10. The applicant argues that the person of ordinary skill in the art would not expect the system of Gupta to be applicable with advantage to the system of Beal, because in Beal the bypass tubes terminate inside the bed and in Gupta the bypass tubes pass completely through the catalyst bed. This is not found persuasive. Gupta establishes equivalency of various arrangements of fixed catalyst beds with respect to the applicability of use disclosed bypass apparatus, see Fig. 1-1a, Fig. 2 and Fig. 2a. Specifically, Gupta in Fig. 1 and 1a shows applicable prior art, a fixed bed reactor having layers of the catalyst bed not separated by any

other equipment. Then in, for example, Fig. 3 the reference shows an improvement of said prior art, wherein the bypass tubes placed within one portion of fixed catalyst bed (22a) are used to bypass flow into a lower layer of said catalyst bed (22b) and that bypass tubes placed within another portion of said fixed catalyst bed (22b) are used to bypass flow into a bottom layer of said catalyst bed (21). This is clearly applicable to the system of Beal comprising a fixed bed reactor wherein the layers of the catalyst bed are not separated by any other equipment and wherein, as shown in Fig. 7, a bypass apparatus is also used to bypass a portion of catalyst bed.

Further the examiner notes that both, Beal et al. and Gupta, are concerned with bypassing a portion of fixed catalyst bed to extend the life said fixed catalyst bed. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the structure disclosed in Beal et al. by using teaching of Gupta, as one of ordinary skill in the art at the time the invention was made would recognize that a bypass apparatus can be used in various catalyst beds regardless of how various layers of said beds are arranged and what other elements are present. Therefore, when looking for modification of bypass apparatus, one of ordinary skill in the art would utilize teachings regarding said bypass apparatus which can be found in various applications, regardless of the specific shape of catalyst bed in which said bypass apparatus is being used.

It would have been prima facie obvious within the purview of 35 USC § 103 to use a teaching regarding a catalyst bypass apparatus used in a catalyst bed of different shape and/or arrangement with the expectation of obtaining corresponding functionality, especially in view of teaching of Gupta (Fig. 1-1a, Fig. 2 and Fig. 2a, as set forth above). See *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980). Applicant's argument that one of ordinary

skill in the art would not expect the apparatus of Gupta to work in the system of Beal et al. is unpersuasive since no factual or testimonial evidence has been presented to support said arguments. In this regard, mere arguments and conclusory statements, which are unsupported by factual evidence, are entitled to little probative value. *In re Linder*, 457 F.2d 506, 508-09, 173 USPQ 356, 358 (CCPA 1972); *In re De Blauwe*, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed. Cir. 1984); In re Wood, 582 F.2d 638, 642, 199 USPQ 137, 140 (CCPA 1978).

Conclusion

11. In view of the foregoing, none of the claims are allowed.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Basia Ridley, whose telephone number is (571) 272-1453. The examiner can normally be reached on Monday through Thursday, from 9:00 AM to 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola, can be reached on (571) 272-1444.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Technical Center 1700 General Information Telephone No. is (571) 272-1700. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Questions on access to the Private PAIR system should be directed to the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

Basia Ridley
Examiner
Art Unit 1764

BR
February 9, 2004